

## CLAIMS

1. An automatic control device (1), comprising  
input means (21, 24) for inputting samples comprising measured  
values (7) of cyclic voltage and/or current ;  
5        computing means (21) for computing a parameter on the basis of  
said samples, and for comparing the computed parameter to a predefined  
condition;  
      initiating means (21, 23) for initiating a control function in response  
to the parameter meeting the predefined condition; c h a r a c t e r -  
10        i z e d by  
      said input means (21, 24) being arranged to input a predefined  
number of samples per one cycle;  
      said computing means (21) being arranged to compute the parame-  
ter with a discrete Fourier transform algorithm optimized on the basis of fixed  
15        coefficients corresponding to said predefined number of samples per cycle.
2. An automatic control device as claimed in claim 1, c h a r a c -  
t e r i z e d in that said predefined number is a power of 2.
3. An automatic control device as claimed in claim 1 or 2, c h a r -  
a c t e r i z e d in that said predefined number is 32.
- 20        4. An automatic control device as claimed in claim 1, 2 or 3,  
c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm cal-  
culations involving coefficients fixed to zero have been eliminated.
5. An automatic control device as claimed in any one of claims 1 to  
4, c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm  
25        multiplication by fixed coefficients 1 or -1 are avoided by use of signs.
6. An automatic control device as claimed in any one of claims 1 to  
5, c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm  
two or more multiplications by a fixed coefficient have been combined into a  
sum equation.
- 30        7. An automatic control device as claimed in any one of claims 1 to  
6, c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm  
samples and coefficients are brought to integer form by multiplication by a  
value that is fourteenth power or higher of two.
8. An automatic control device as claimed in any one of claims 1 to  
35        7, c h a r a c t e r i z e d in that said computing means are arranged to com-

pute a parameter that is one of the following: root-mean-square current, power factor, (sign), distortion, earth fault current.

9. An automatic control device as claimed in any one of claims 1 to 8, c h a r a c t e r i z e d in that the automatic control device is an electric protection device and said control function comprises isolation of a second device  
5 (3) from the electric line (2).

10. An automatic control device as claimed in any one of claims 1 to 8, c h a r a c t e r i z e d in that the automatic control device is connected to a generator (40) feeding the electric line (42) and said control function comprises  
10 adjustment of the operation of said generator.

11. A method for automatic control of an electrically operated device, comprising

inputting samples comprising measured values of cyclic voltage and/or current ;

15 computing a parameter on the basis of said samples;  
comparing the computed parameter against a predefined condition;  
initiating a control function in response to the parameter meeting the predefined condition;

20 c h a r a c t e r i z e d by  
fixing the number of samples input per one cycle;  
computing the parameter with a discrete Fourier transform algorithm optimized on the basis of fixed coefficients corresponding to said predefined number of samples per cycle.

25 12. A computer program product, executable in a computer, c h a -  
r a c t e r i z e d in that execution of the computer program product in the computer causes the computer to carry out the steps of claim 11.